Session 105

Graphics & Imaging Overview

Peter Graffagnino
Director, Graphics and Imaging Engineering

Aqua

Frameworks

Graphics

Darwin

Aqua

Frameworks

Graphics

Darwin

Aqua

Frameworks

Quartz | OpenGL | QuickTime

Darwin

Aqua

Frameworks

Quartz | OpenGL | QuickTime

Darwin

Industry Standard 2D Imaging Model

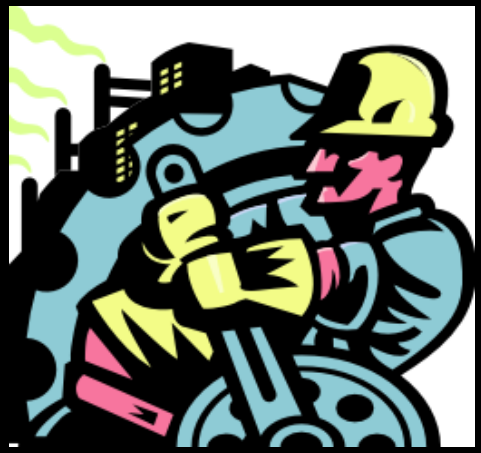
Adobe Type 1

TrueType

OpenType

Outline Fonts

Sampled Images



Vector Line Art

Quartz 2D

- Lightweight C Library
- Read/Write PDF
- Fast anti-aliasing
- Apple Type System built-in
- Type 1 Scaler built-in
- ColorSync built-in

50MB of Bundled Fonts

Decorative and
Classic Roman designs

6 high-quality Japanese fonts

No resolution or embedding limits

Baskerville Regular

Baskerville Italic

Baskerville SemiBold

Baskerville Bold

Baskerville Bold Italic

Baskerville SemiBold Italic

American Typewriter Regular

American Typewriter Bold

American Typewriter Light

American Typewriter Condensed

American Typewriter Condensed Bold

American Typewriter Condensed Light

Big Caslon Medium

Copperplate Bold

Copperplate Regular

Copperplate Light

Didot Regular

Didot Italic

Didot Bold

HERCULANUM REGULAR

Marker Felt Wide

Marker Felt Thin

Papyrus Regular

Zapfino Regular

Optima Regular

Optima Italic

Optima Bold

Optima Bold Italic

Optima ExtraBold

正伝寺の石庭です

正伝寺の石庭です

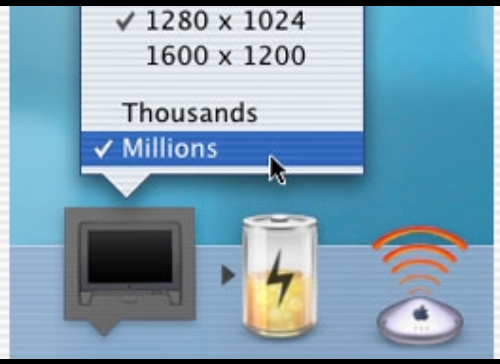
正伝寺の石庭です

正伝寺の石庭です

正伝寺の石庭です

正伝寺の石庭です

New Printing Architecture



Quartz 2D

Quartz 2D

High Fidelity Printing

Canon

EPSON

hp

invent

PostScript and Inkjet

Aqua

Frameworks

Quartz | OpenGL | QuickTime

Darwin

Aqua
Frameworks
Quartz
OpenGL
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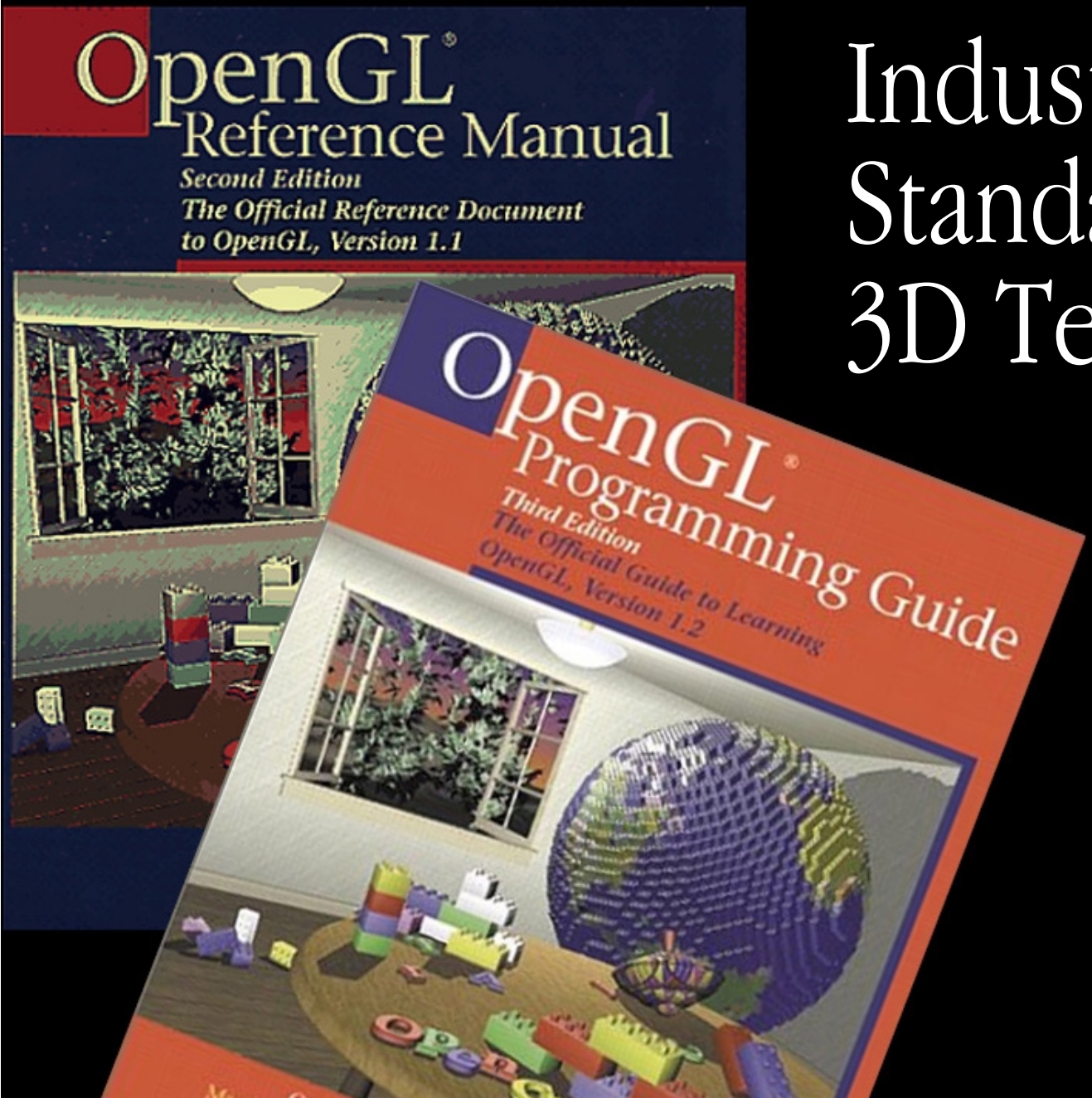


Industry Standard 3D Technology

Not Just for Games

Alias | wavefront

Fully Accelerated on Mac OS X

Aqua
Frameworks
Quartz
OpenGL
QuickTime
Darwin

Aqua

Frameworks

Quartz | OpenGL | QuickTime

Darwin

QuickTime 5
00:00:00

QuickTime 5 Built-in

- Brand new user interface
- Flash 4
- Cubic VR
- DLS music synthesizer
- MPEG-1 streaming
- New DV codec
- Leverages new Mac OS X sound architecture

Aqua

Frameworks

Quartz | OpenGL | QuickTime

Darwin

Optimized for G4 and Multiprocessing

Quartz

OpenGL

QuickTime

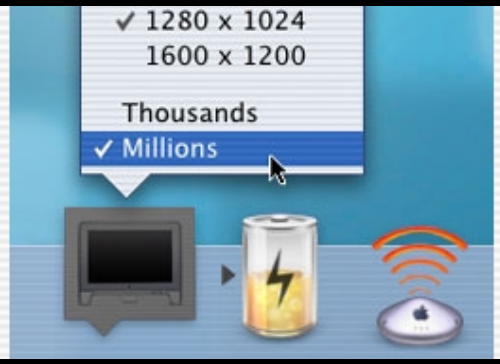
Window System as a Digital Image Compositor

Quartz
OpenGL
QuickTime
Quartz Compositor

Quartz Compositor

- Double buffered windows
- Per-pixel alpha channel
- Per-window fade control
- Per-window transform and warp
- Integrates 2D, 3D, and video

Demo

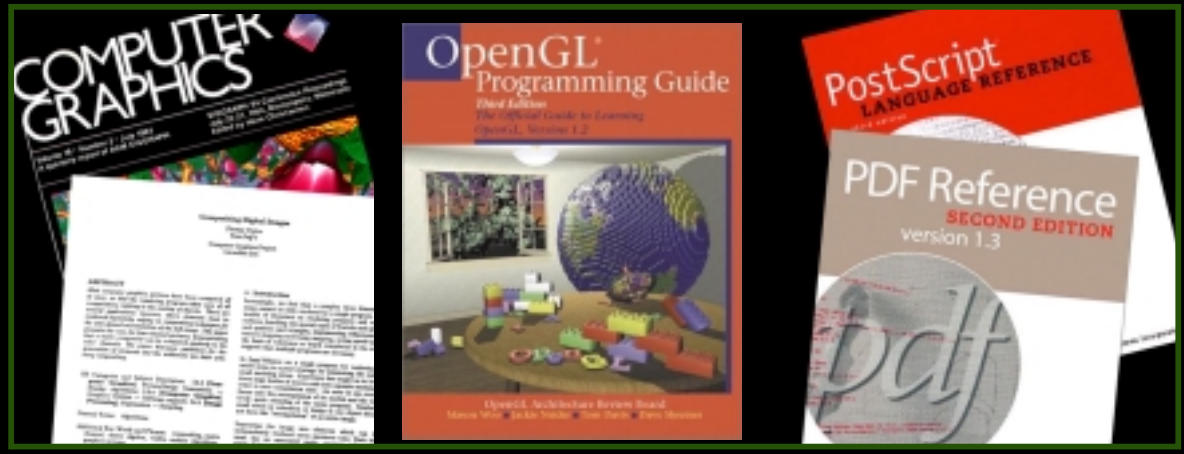


Quartz

OpenGL

QuickTime

Quartz Compositor



Tuesday

	Hall 2	A1	A2	J	C	J1	Civic
9:00am	500 Java Overview	300 Networking Overview	201 How Threading Can Benefit Your Application on Mac OS X	108 PDF, Quartz & Mac OS X			
9:30am							
10:00am							
10:30am	700 Mac OS X Tools Overview	107 2D Graphics Using Quartz	201 Java Virtual Machine	304 Extensible Kernel Networking Services			
11:00am							
11:30am							
12:00pm							
12:30pm							
1:00pm							
1:30pm							
2:00pm	701 Project Builder Introduction	301 Mac OS X Server	202 FireWire Overview	109 Graphics for Games			
2:30pm							
3:00pm							
3:30pm	702 Interface Builder	302 Directory Services	203 USB Overview	110 Drawing Unicode Text with ATSUI			603 Introduction to WebObjects Tools
4:00pm							
4:30pm							
5:00pm	106 Carbon Event Manager	303 Network Configuration & Mobility	204 I/O Kit: Storage Drivers	502 Wrapping Mac OS APIs into Java Beans			604 Introduction to Enterprise Objects Framework (EOF)
5:30pm							
6:00pm							

Wednesday

	Hall 2	A1	A2	J	C	J1	Civic
9:00am	400 QuickTime Overview	305 Extending Security in Mac OS X	703 Project Builder In-Depth	116 Mac OS X File System	205 I/O Kit: PCI Drivers & Open Firmware	FF100 Feedback Forum: Apple System Profiler	608 Solutions with WebObjects
9:30am							
10:00am							
10:30am	111 Make it Aqua: Adopt the Mac OS X User Experience	503 Java Development Tools	115 Open Source at Apple	306 Authentication APIs	117 Image Capture Framework	FF101 Feedback Forum: Technical Publications	609 Developing Desktop Applications with WebObjects
11:00am							
11:30am							
12:00pm							
12:30pm							Metrowerks Presentation
1:00pm							
1:30pm							
2:00pm	112 Carbon: Windows & Menus	605 Moving to WebObjects 5	401 Interactive Aspects of QuickTime	307 Security: Keychain	118 ColorSync	FF102 Feedback Forum: Meet the VPs	206 FireWire In-Depth
2:30pm							
3:00pm							
3:30pm	113 Text on Mac OS X	606 Direct to Java Client	402 QuickTime for Professional Video	404 OpenGL: High Performance 2D	304 Java Performance	FF103 Feedback Forum: Aqua	207 USB In-Depth
4:00pm							
4:30pm							
5:00pm	114 Application Packaging and Document Binding	607 Practical Uses of XML with WebObjects	403 Broadcasting Live with QuickTime Streaming	405 OpenGL: Geometry & Modeling	308 Network Services Location	FF104 Feedback Forum: Worldwide Developer Relations	505 JBuilder
5:30pm							
6:00pm							

Thursday

	Hall 2	A1	A2	J	C	J1	Civic
9:00am	119 Carbon Controls and Appearance I	610 Introduction to Data Modeling & Connectivity	506 Mac OS X Features for Java Applications	408 OpenGL: Optimization		FF106 Feedback Forum: Wireless Technologies	406 QuickTime & Darwin Streaming Server Overview
9:30am							
10:00am							
10:30am	120 Carbon Controls and Appearance II	611 Deploying WebObjects Applications	704 Compiler Technologies	409 OpenGL: Advanced Rendering	127 Speech Recognition & Synthesis In-Depth	FF107 Feedback Forum: Networking	407 Customizing QuickTime & Darwin Streaming Server
11:00am							
11:30am							
12:00pm							
12:30pm							
1:00pm							
1:30pm							
2:00pm	121 Carbon Performance Tuning	612 Direct to Web	309 Security: Kerberos	125 Apple Help	128 Font Management on Mac OS X	FF108 Feedback Forum: FireWire & USB	507 QuickTime for Java
2:30pm							
3:00pm							
3:30pm	122 Using Cocoa	613 Advanced Enterprise Objects Framework (EOF)	124 Printing	310 AFP 3.0 and AppleShare Client on Mac OS X	129 Mac OS X Application Localization	FF109 Feedback Forum: QuickTime	508 Java Graphics
4:00pm							
4:30pm							
5:00pm	123 Advanced Cocoa Topics	614 Advanced Java Client	705 Apple Performance Tools	208 Audio Services in Mac OS X	FF105 Feedback Forum: International Technologies	FF110 Feedback Forum: OpenGL	311 Web-Enabling Your Application
5:30pm							
6:00pm							

Friday

	Hall 2	A1	A2	J	C	J1	Civic
9:00am	706 Debugging on Mac OS X	616 Getting the Most Out of WebObjects Tools	132 Graphics & Imaging Tips and Tricks	509 Java Security	137 Mac OS X Documentation How To	FF116 Feedback Forum: Mac OS X Server	138 Core Foundation Overview
9:30am							
10:00am							
10:30am	130 Designing & Using Aqua Icons	617 WebObjects Security	707 Darwin Documentation Project & HeaderDoc	135 Input for Games	FF113 Feedback Forum: Security	FF117 Feedback Forum: Java	
11:00am							
11:30am							
12:00pm							
12:30pm							
1:00pm							
1:30pm							
2:00pm	131 CarbonLib: Carbon on Mac OS 8 & 9	618 Optimizing WebObjects Applications	133 AppleScript Overview	136 Sound & Networking for Games	708 C++ Frameworks for Mac OS X	FF118 Feedback Forum: Graphics	139 Leveraging BSD Services in Mac OS X
2:30pm							
3:00pm							
3:30pm		FF111 Feedback Forum: WebObjects	134 Building AppleScript Applications	209 Audio Processing & Sequencing Services	FF114 Feedback Forum: High Level Toolbox	FF119 Feedback Forum: Apple Developer Tools	140 The Darwin Kernel
4:00pm							
4:30pm							
5:00pm			FF112 Feedback Forum: Cocoa	210 MIDI in Mac OS X	FF115 Feedback Forum: AppleScript	FF120 Feedback Forum: Games Technologies	FF121 Feedback Forum: Darwin
5:30pm							
6:00pm							

WWDC

Worldwide Developers Conference 2001